

MEMORANDUM

To: Carolyn Douglas, EPA Region IX
Federal Facilities Coordinator

From: William E. Ritthaler, URS Consultants, Inc. *WR*

Subject: Completed Work

cc: Jere Johnson, EPA Region IX Work Assignment Manager
Travis Cain, EPA Region IX Project Officer
Jeri Simmons, EPA Region IX Contract Officer

Attached is the following completed:

PA: ☐ PA Review: ☐ SI: ☐ ESI: ☐

Other: Federal Facility SI Review

Site Name: San Diego Naval Station

Latitude: ~~32° 40' 09" North~~ (2756)

Longitude: ~~117° 06' 30" West~~

EPA ID#: CA4170090233

City, County: San Diego, San Diego

State Recommendation:
(for reviews only)

For EPA Use Only

EPA Further Action Determination: SI complete N

Lead Agency: Fed Fae

Sign-off Date: 6/7/94


Initials of Site Assessment Manager: epd

Document Screening Coordinator: Jim 3 6/7/94

Chief, Site Evaluation and Grants Section: epd per JM

MEMORANDUM

To: Jim Quint, EPA Region IX

From: Pamela Cory, URS Consultants, Inc. 

Subject: Final Report for San Diego Naval Station Federal
Facility SI Review
EPA I.D. No.: CA4710090233

Date: October 5, 1994

DCL No.: 4162311.31.33.990 01.b.1

cc: Travis Cain, EPA Region IX Project Officer
Jeri Simmons, EPA Region IX Contract Officer

Attached is a copy of the above referenced report, which I am sending at your request to replace your missing copy. Please call if you have any questions. My direct line is 774-2709.

2007

Purpose: Federal Facility SI Review

**Site: San Diego Naval Station
San Diego, CA 92136-5000
San Diego County**

Site EPA ID Number: CA4170090233

URS Investigators: Des Garner

Report Prepared By: Des Garner

Report Reviewed By: Chris Nelson

Review/Concurrence:

William E. Spitzer

Document Control No.: 62311.31.33.767 05.a.1

Report Date: May 27, 1994

**Submitted To: Carolyn Douglas
EPA Region IX
Federal Facilities Coordinator**

EPA FINAL REPORT

URS Consultants, Inc.

Contract No. 68-W9-0054

San Diego NAS-A\R767.052794.dg

ARCS EPA Region IX

WA No: 54-27-9JZZ

1.0 Introduction

The U.S. Environmental Protection Agency (EPA), Region IX, under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) has tasked URS Consultants, Inc. (URS) to conduct a review of Federal Facility Site Inspection (SI) documentation at the Naval Station (NAVSTA) San Diego site, in San Diego city and county, California.

The NAVSTA San Diego site was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on August 1, 1980. The site is not listed on the Federal Agency Hazardous Waste Compliance Docket, as of November 18, 1993. An Initial Assessment Study (IAS) was completed for the Navy in 1986. The IAS was approximately equivalent in scope to a CERCLA Preliminary Assessment (PA). The purpose of the IAS was to review existing information on the site and its environs to assess the threat(s), if any, posed to public health, welfare, or the environment and to determine if further investigation is warranted. A PA on two of the Installation Restoration Program sites was subsequently conducted by the Navy in 1989. Ecology and Environment, Inc. (E&E). conducted a Federal Facility PA Review in August 1989, on behalf of the U.S. EPA. Finally, the Navy conducted a Site Investigation (SI) in 1992. After reviewing the E&E PA, and the other investigative reports, EPA decided that further investigation of the NAVSTA San Diego site would be necessary to more completely evaluate the site using EPA's Hazard Ranking System (HRS) criteria. The HRS assesses the relative threat associated with actual or potential releases of hazardous substances from sites. It is the principal mechanism EPA uses to place sites on the National Priorities List (NPL). The NPL identifies sites at which EPA may conduct remedial response actions. This report is the result of URS' evaluation of the submitted data.

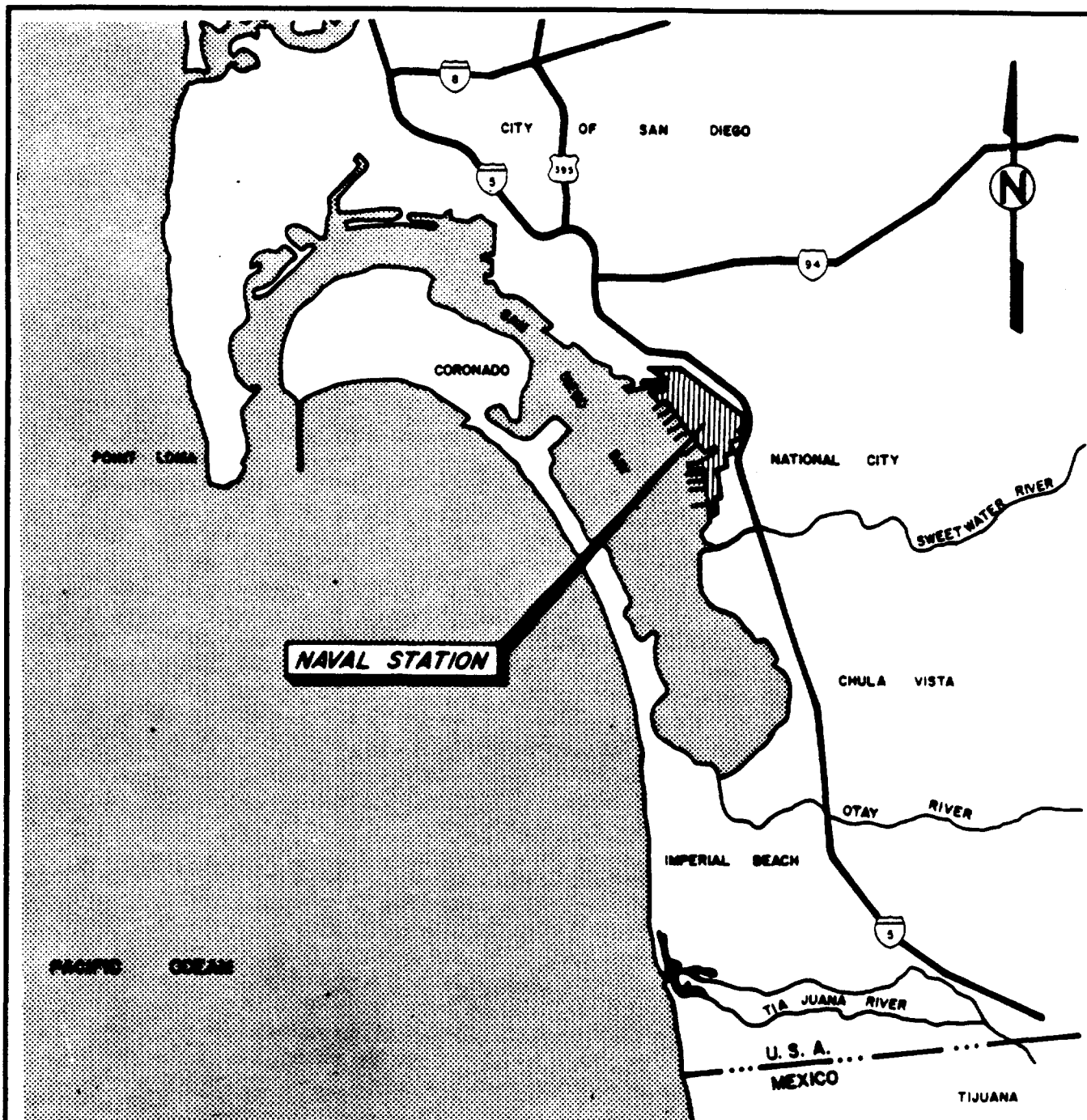
1.1 Apparent Problem

In February 1992, a SI of the San Diego Naval Station was conducted by IT Corporation for the Department of the Navy Southwestern Division. This SI evaluated five sites at the Naval Station, which had been identified during the IAS of 1986, and the PA of 1989. A wide variety of organic (fuels, solvents, and PCBs) and inorganic (lead, arsenic, cadmium, and other heavy metals) contaminants are present in both soils and groundwater at these sites. The shallow groundwater at these sites (8-17 feet below ground surface [bgs]) is tidally influenced; thus there is concern that heavy metal contaminants in the groundwater may potentially impact San Diego Bay. There is no beneficial use of the shallow groundwater, and no substantiated connection to the drinking water aquifer, which is screened at approximately 900 feet bgs. In addition, San Diego receives all of its drinking water from surface sources, with one well for standby use only. Individual sites are identified and described in Section 2.2 (1,2,3,4,5).

2.0 Site Description

2.1 Location

The NAVSTA San Diego is located approximately 3 miles southeast of the center of San Diego, 10 miles north of the Mexican border. The site is located in Township 17 South; Range 2 West: Latitude 32° 40' 09" North, Longitude 117° 06' 30" West



SOURCE:

IT Corporation, 1992

URS Consultants
100 California Street
San Francisco, CA 94111
May 16, 1994

SITE LOCATION MAP

San Diego Naval Station
San Diego, California

FIGURE

1

(see Figure 1, Site Location Map). The NAVSTA site occupies 1,127 acres, and provides personnel and logistic support services for 25 tenant commands, in addition to supporting naval activities at other locations. There are a total of 7,300 military personnel and 5,400 civilian personnel on-site. The site is bounded by the city of San Diego to the north, San Diego Bay to the west, and National City to the east and south (1,12).

2.2 Site Descriptions

There are five sites of interest previously identified during the IAS of 1986 and the PA of 1989, both of which were conducted by the Navy. These sites were designated for further investigation, and were the subject of the SI conducted by the IT Corporation for the Navy in 1992. The IAS also investigated the following three sites, which were slated for no further action and were not included in the 1992 SI. These three sites do not have substantial hazardous waste quantities, and were not investigated further during the URS review.

Admiral Baker Golf Course: The landfill located at this site was used for the disposal of organic (plant) debris associated with the maintenance of the facility. It was closed in 1974 and covered with 4 feet of clean fill. No hazardous material or waste oil is believed to have been routinely disposed of in the landfill, although there is reference in the IAS to the disposal of 90 gallons of waste oil and paint thinners in 1978. The IAS slated this site for no further action. A Solid Waste Assessment Test (SWAT) is currently in progress at the landfill (5,7,10).

Ship Repair Basins: This site was selected for no further action based on the fact that primarily construction debris and rubble were disposed of at this location along with small quantities of waste oil. The total quantities of waste oil and sludges disposed of at this site are reported to be minor in comparison with the five sites that were the subject of the SI. A further SI is reportedly in progress at this site, and a SWAT has also been conducted. This documentation (Draft SI) was not received in time for incorporation in this report (5,7,8,9,10).

Murphy Canyon Housing: During World War II and the Korean conflict, the Murphy Canyon area was used extensively for military training, including gunnery practice. The IAS states that all practice ordnance was removed from this site in 1986, and that the site was recommended for no further action (5).

The sites selected for further action and assessed in the SI of 1992 are as follows. These sites form the basis of this URS assessment.

2.2.1 Mole Pier Site

Mole Pier is located between Paleta Creek, in the triangle bounded by 7th Street, Mole Road, and Cummings Road, and is approximately 1,000 feet from the San Diego Bay (see Figure 3, Mole Pier Site). The western third of the site is occupied by maintenance and storage buildings. Office and storage buildings are located along the southern boundary, along 7th Street. The rest of the site is occupied by a centrally located ball field, outdoor recreation areas, and parking areas. The total area of the site is approximately 34 acres. The site was enclosed with earthen berms and was designated as a disposal area. Materials disposed of at this site included creosoted pilings, trees, lumber, concrete, contaminated gasoline, waste oil, diesel fuel, and solvents. Open burning was conducted at the eastern

end of the site. The chemical and petroleum wastes disposed of at the Mole Pier site are summarized in Table 2.3-1 of Section 2.3 of this report (1,5).

2.2.2 Salvage Yard

The salvage yard is located between Cummings Road and Harbor Drive (as shown in Figure 4, Salvage Yard Site) approximately 3,000 feet from the San Diego Bay. The site is an asphalt-covered parking lot, with no structures. It occupies approximately 20 acres. This facility was responsible for receiving, selling, donating, and disposing of all Navy property between 1943 and 1975. Materials handled included polychlorinated biphenyl (PCB) transformer oils, mercury, old batteries, solvents, refuse, and demolition debris. Some of the wastes were incinerated in the two on-site incinerators. Further details of waste types disposed of at this facility are given in Section 2.3.4 of this report (1,5).

2.2.3 Defense Property Disposal Office (DPDO) Storage Yard

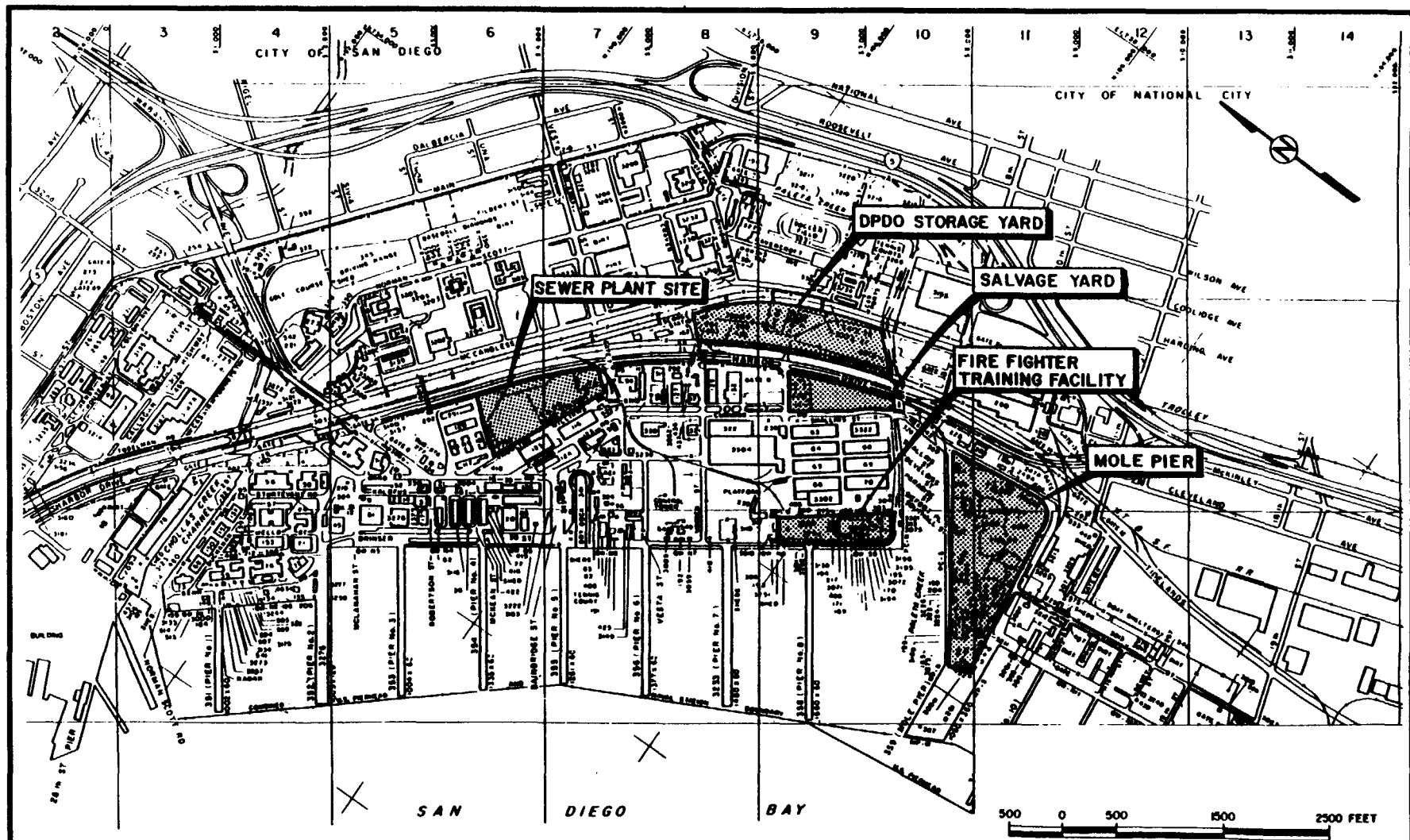
The DPDO storage yard is an 11-acre area located east of harbor Drive, adjacent to the north bank of Paleta Creek, approximately 3,500 feet from the San Diego Bay. Two warehouses are located near the center of the site; the area south of these is used as a boat storage yard. The site has been paved since 1975. Surface runoff drains directly into Paleta Creek. This site was used as a storage yard for drummed material, including paints, lubrication oils, and solvents, in unused, unopened, or expired condition. Further information on the materials stored at this site is given in Section 2.3.3 of this report (see Figure 6, DPDO Site) (1,3,5)

2.2.4 Sewer Plant Site

The sewer plant site is located between Harbor Drive and Knowlton Williams Road approximately 2,000 feet from the San Diego Bay, and is bordered to the northwest by the Public Works Corporation (see Figure 7, Sewer Plant Site). A small portion of the north and west perimeters of the site is covered by asphalt. The site lies on a tidal flat that has been reclaimed through placement of fill material, occupying an area of approximately 12 acres. The sewer plant operated from 1951 - 1963 and was eventually demolished in 1977. Waste oil, paint containers, sewage sludge, and heavy metals containing wastes were believed to have been disposed of at this site. Section 2.3.4 contains further details of site operations (1,2).

2.2.5 Fire Fighter Training Facility

The fire fighter training facility is located between Southall Street and Seifert Place, northwest of Pier Number 8, approximately 2,000 feet from the San Diego Bay (see Figure 8, Fire Fighter Training Facility). The site is generally asphalt-paved, with the exception of the gravel soil covered area at the north end of the site, near a 25,000-gallon JP-5 fuel tank. The site occupies approximately 7 acres. Contamination at this site is believed to consist primarily of JP-4, JP-5, and diesel fuel (1,2).



SOURCE:

IT Corporation, 1992

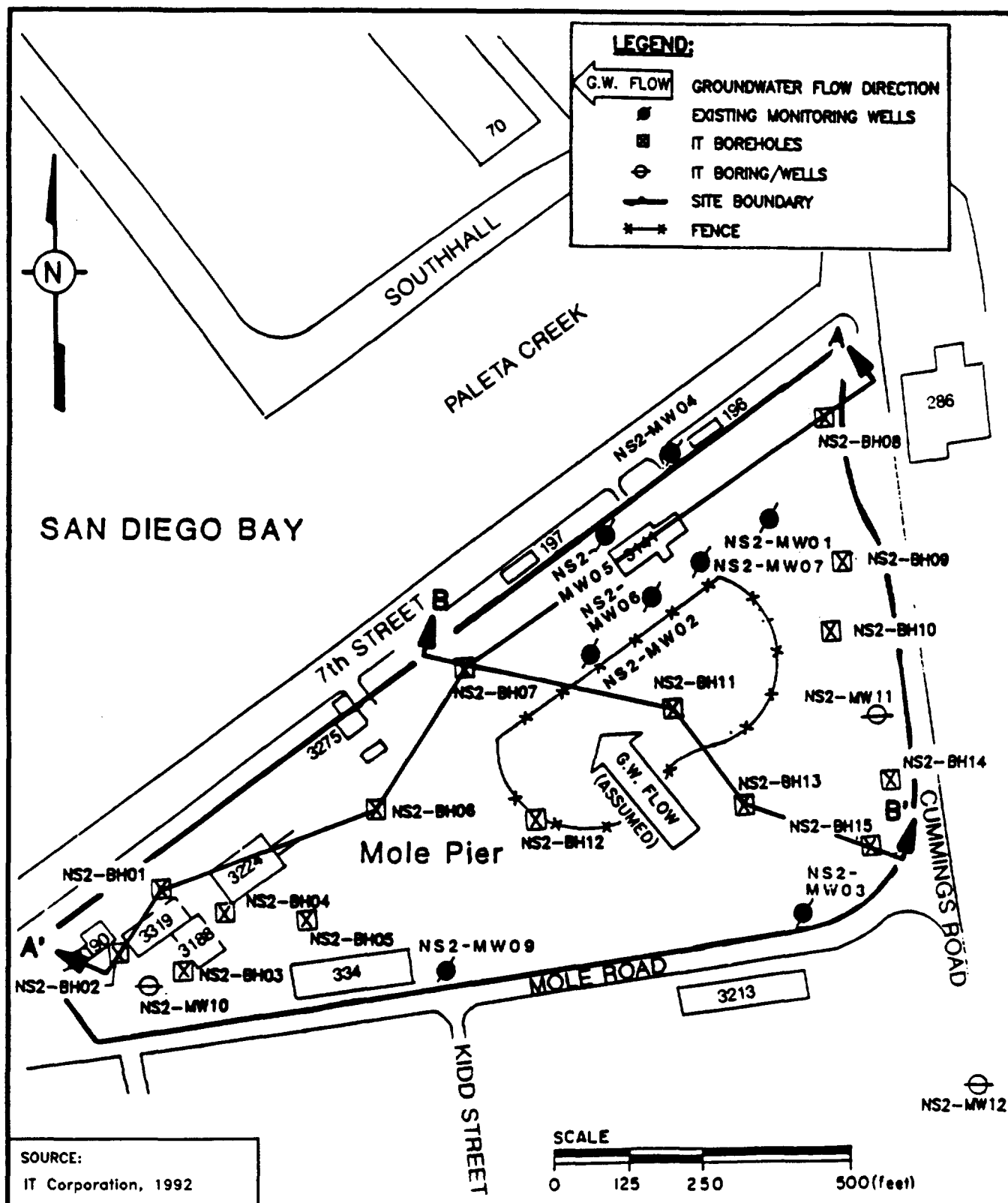
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May 16, 1994

LOCATION OF INDIVIDUAL SITES

San Diego Naval Station
San Diego, California

FIGURE

2

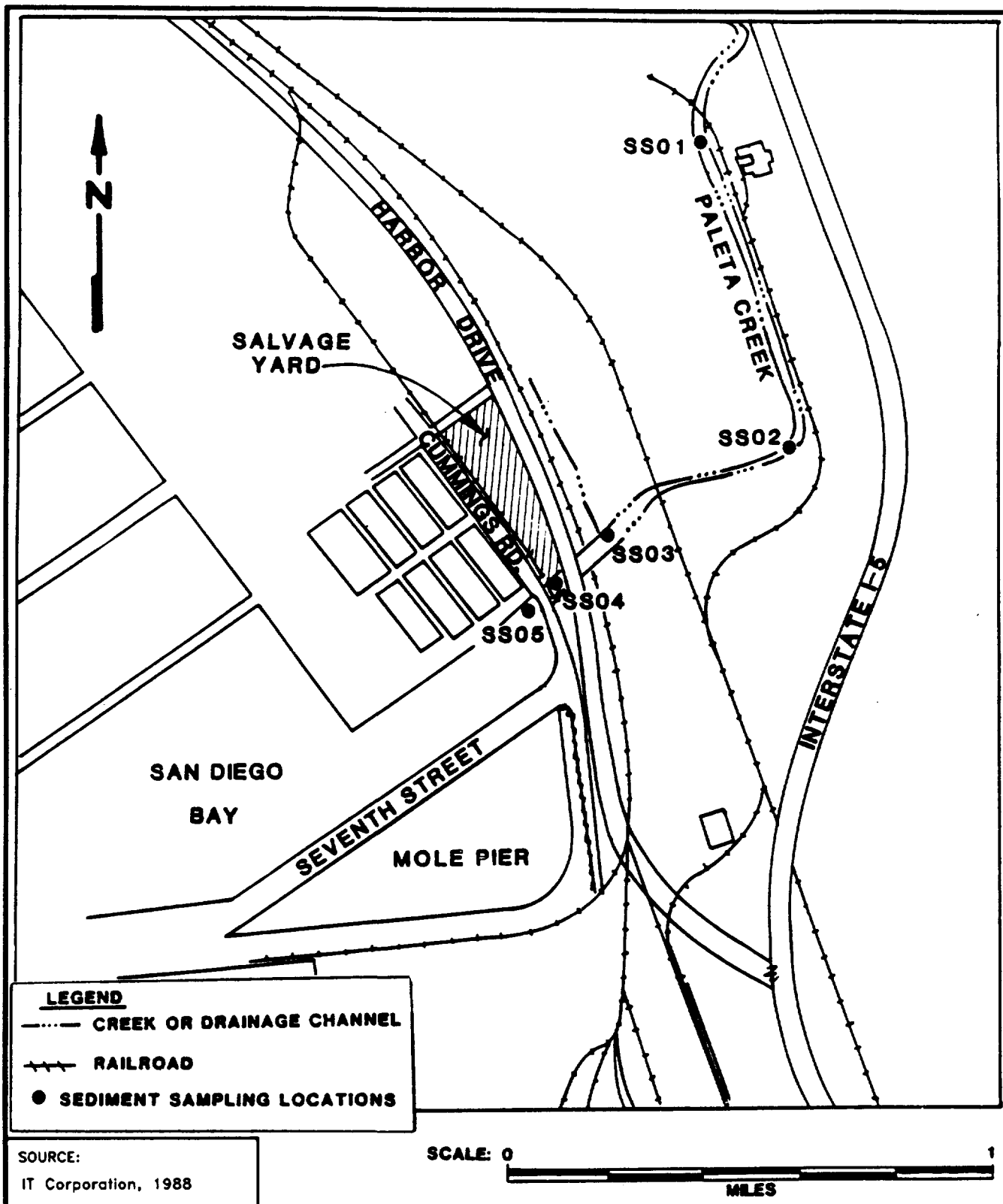


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MOLE PIER SITE BORING AND SAMPLING LOCATIONS

San Diego Naval Station
San Diego, California

**FIGURE
3**

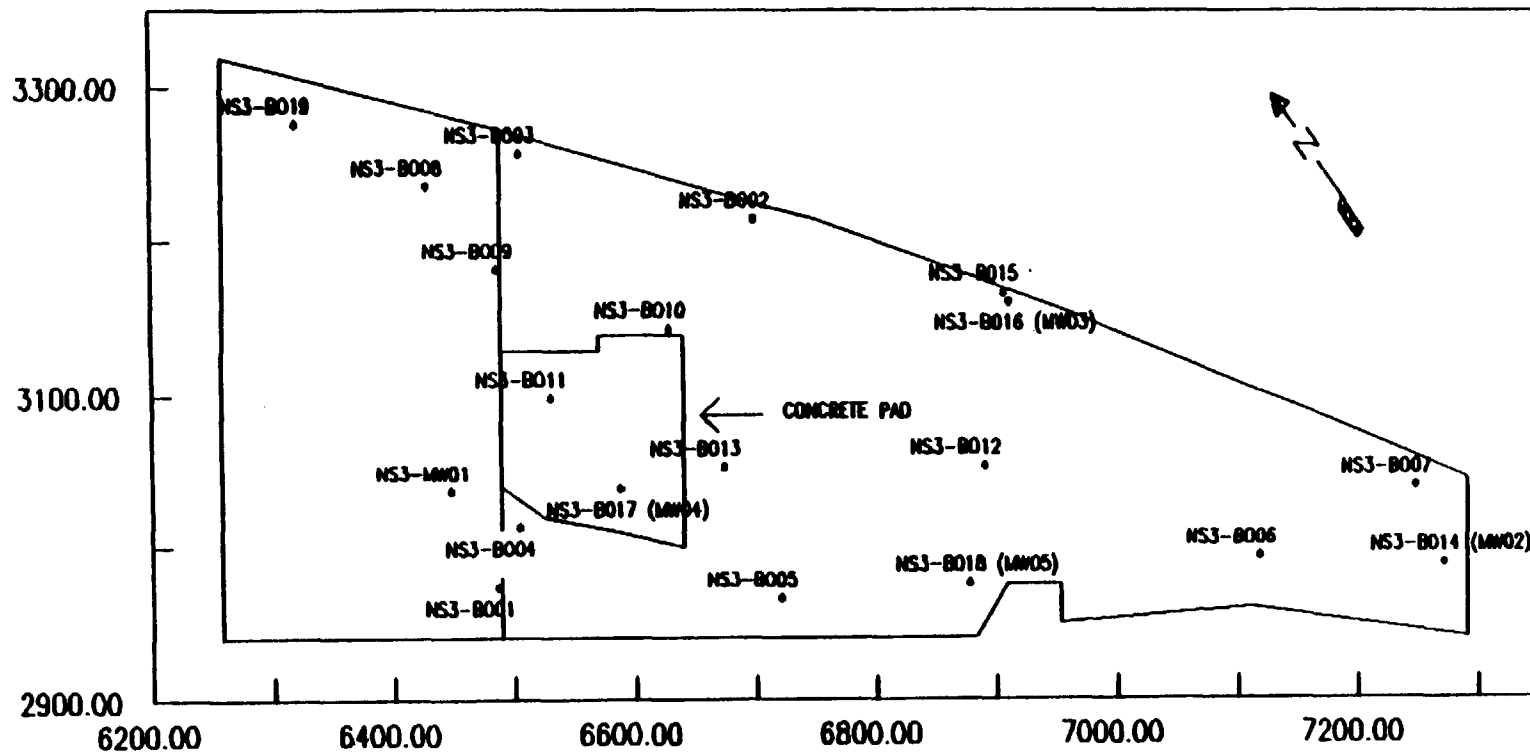


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SALVAGE YARD SITE SEDIMENT SAMPLE LOCATIONS

San Diego Naval Station
 San Diego, California

FIGURE
 4



SOURCE:
IT Corporation, 1988

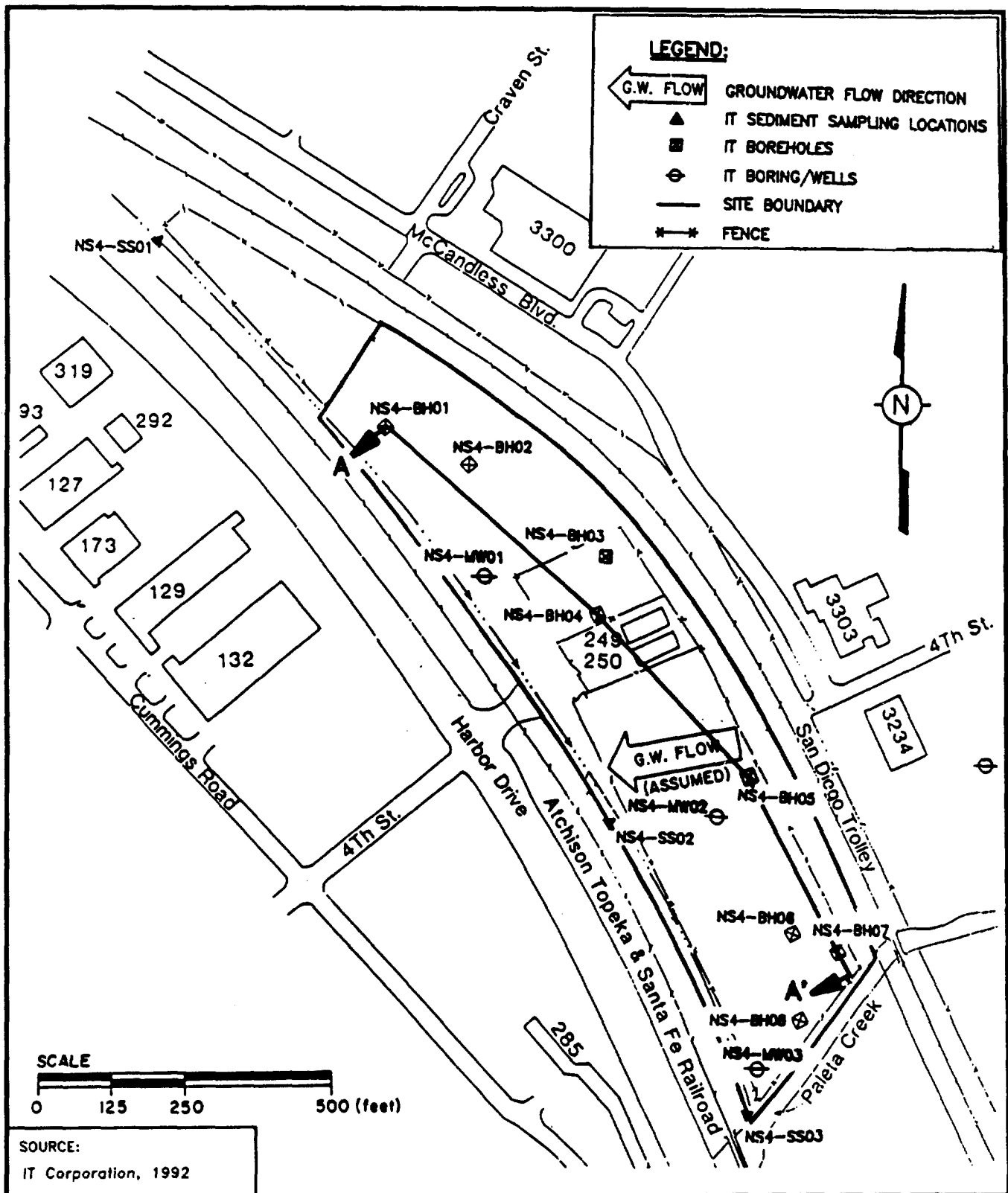
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May 16, 1994

SALVAGE YARD SITE MONITORING WELL AND BORING LOCATIONS

San Diego Naval Station
San Diego, California

FIGURE

5

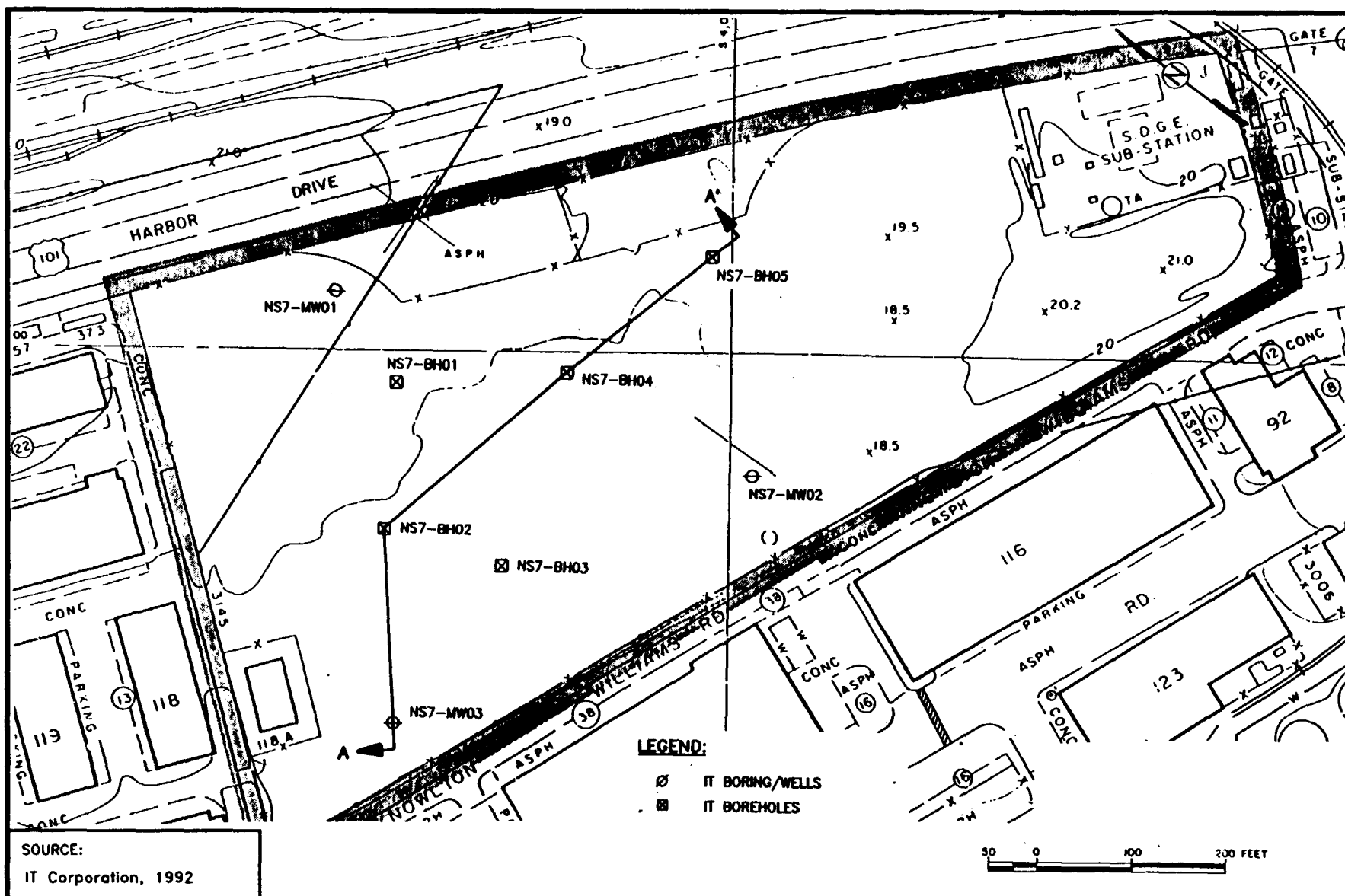


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DPDO SITE SAMPLING LOCATIONS

San Diego Naval Station
 San Diego, California

FIGURE
6



URS Consultants
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San Francisco, CA 94111
May 16, 1994

SEWER PLANT SITE SAMPLING LOCATIONS

San Diego Naval Station
San Diego, California

FIGURE

7

2.3 Operational History

2.3.1 Mole Pier

Mole Pier was created in 1942 with hydraulic fill material. Groundwater at the site is thus shallow, at 10 - 11 feet bgs. From approximately 1945 until 1972 the site was used for the disposal and open pit burning of various demolition debris and hazardous waste. Wastes disposed of at this site are summarized in Table 2.3-1 (1).

In the 1970s trucks and heavy equipment returning from Vietnam were routinely cleaned in the area of the existing ball fields, by spraying with diesel fuel and rinsing the water into Paleta Creek. There is no documentation of any other wastes being disposed of into Paleta Creek (1,5).

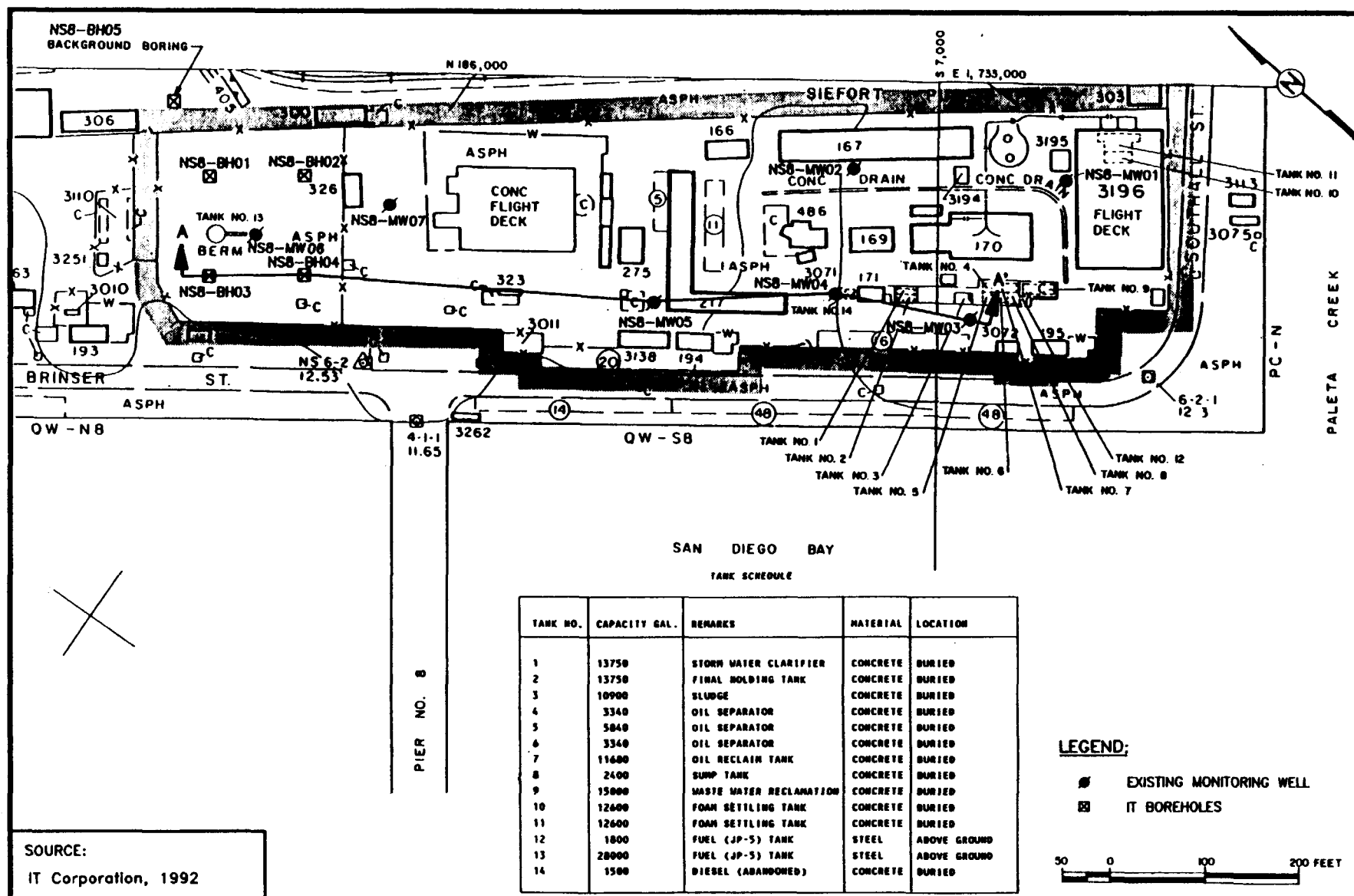
**Table 2.3-1
Wastes Disposed of at Mole Pier
NAVSTA San Diego (1945 - 1972)**

Waste	Contaminant(s)	Time Period	Estimated Quantity
Oils, Diesel, Gasoline	Petroleum Hydrocarbons (TPH), Polyaromatic Hydrocarbons (PAHs)	1945-1964	540,000 Gallons
Solvents	Trichloroethene (TCE), Methyl Ethyl Ketone (MEK), Carbon Tetrachloride, Acetone, Methylene Chloride	1945-1972	34,400 Gallons
Sandblast Grit	Metals	1950-1972	1,500 tons

2.3.2 Salvage Yard

The salvage yard has operated since 1943, processing scrap metal for sale off-site. Before 1975 metal items such as transformers, drums, and cans were processed, many of them containing liquid wastes. Two on-site incinerators burned waste material that could not be recycled, including paint and solvent wastes. Waste liquids were also reportedly drained onto unpaved ground at this site (3,4,5).

Reportedly approximately 1 million 55-gallon drums were processed at this site between 1943 and 1975, although only 100 - 200 drums per month actually contained wastes. Product reportedly leaked and pooled on the unpaved ground from approximately 5 percent of the drums. Mercury from thermometers and compasses, and electrolytes from spent batteries (sulfuric acid) were reported as being drained onto the ground in this area (3,4,5).



FIRE FIGHTER TRAINING FACILITY SITE BOREHOLE AND SAMPLE LOCATIONS

San Diego Naval Station
San Diego, California

FIGURE

8

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May 16, 1994

The estimated quantities of waste disposed of on-site are (3,4,5):

- 15,000 - 110,000 gallons drummed waste;
- 750 - 1,800 pounds of mercury;
- 7,500 - 15,000 gallons of transformer fluids;
- 9,600 - 19,200 gallons of battery acid.

In 1976, 8 inches of surface soil was removed from the site when PCB contamination was identified. Analytical data for the soil removed are not available. The area was subsequently paved (4).

2.3.3 Defense Property Disposal Office (DPDO) Disposal Yard

This site was designated as a Naval Supply Center from 1943 - 1975. From 1975 to 1981 the site served as a DPDO storage yard. The site was originally unpaved and was oiled regularly with waste petroleum, oils and lubricants (POLs) as a dust control measure. PCBs and paints are also believed to have been stored at this site. Surface runoff drains directly into Paleta Creek. The site was eventually paved in 1975 (1).

Wastes disposed of at the DPDO site are summarized in Table 2.3-2 (1).

Table 2.3-2
Wastes Disposed of or Stored at the DPDO Yard (1943 -1981)

Waste	Contaminant(s)	Time Period	Estimated Quantity
Waste oils, petroleum hydrocarbon solvents	TPH, Metals, Aliphatic Hydrocarbons	1943-1975	35,000 - 75,000 gallons
Paints	Metals	1970s	Unknown
Transformer Oils	PCBs	1970s	Unknown

2.3.4 Sewer Plant Site

The sewer plant was originally constructed between 1948 and 1951, and was operated by the city of San Diego until 1963. The plant was decommissioned in 1963, when a new municipal sewage plant came on line, and was subsequently acquired by the Navy in 1977. The plant was demolished between 1977 and 1978 and remained a vacant lot until 1983, when the southern part of the lot was graded and used for parking. By 1985 the entire area of the former plant had been converted into a parking lot (1,2).

Potential contaminants at this site include the following (1,2)

- Waste oil, petroleum products;
- Paint containers;
- Sewage Sludge;
- Heavy Metals.

No quantities are available for any of these contaminants (1,5).

2.3.5 Fire Fighter Training Facility (FFTF)

Approximately 3,500 gallons of JP-5 fuel is used each week for training fires. Quench water from each exercise is captured in an oil water separator. Prior to 1988 the de-oiled wastewater from these exercises was discharged directly into the San Diego Bay. Under current operational procedures, this wastewater is now collected within the underground storage tank (UST) system on-site. There are a total of four USTs in this system; the total capacity of the system is unknown. However, San Diego County Environmental Health Department has reported recent petroleum product discharges to the San Diego Bay, so it is possible that this system may not be fully operational (1,2).

2.4 Regulatory Involvement

2.4.1 California EPA Department of Toxic Substances Control (DTSC)

The California Environmental Protection Agency Department of Toxic Substances Control (DTSC) will assume the role of lead agency at the NAVSTA San Diego facility on July 1, 1994. The Regional Water Quality Control Board (RWQCB) is currently the lead agency. At the present time, all reports prepared by the Navy or Navy contractors for this facility are reviewed by both RWQCB and DTSC. This situation is expected to continue when DTSC assumes the lead at the site (7,8).

2.4.2 Regional Water Quality Control Board (RWQCB)

RWQCB is currently the lead agency at this facility. RWQCB outlined the following ongoing investigations at the facility (7,10):

Site Inspection at the Ship Repair Basin Site: This site was recommended for no further action after the IAS of 1986 and was therefore not included in the SI of 1992. However, upon subsequent review, RWQCB has mandated further investigation at this site, and a SI is in progress. URS has requested a copy of the draft SI.

SWAT investigation at the Golf Course Landfill: This landfill was used for organic debris (primarily vegetation, grounds-keeping debris) and is not believed to contain any municipal waste or hazardous waste. It is therefore outside of the scope of the URS Federal Facility SI review.

2.4.3 San Diego County Environmental Health Department

San Diego County Environmental Health Department does not have jurisdiction over any of the IRP sites at the NAVSTA facility. It is involved primarily with issuing well and boring permits, and removing/remediating underground and above ground fuel storage tanks. Its involvement at the FFTF site, which involves floating petroleum product on the shallow groundwater, is not clear at this stage, since the Navy has not determined whether this contamination is subject to the provisions of the CERCLA petroleum exclusion (9,10).

Since the plume is believed to consist of JP-4, JP-5, and diesel fuel, URS believes that the provisions of the CERCLA petroleum exclusion apply. (Section 101[14] and Section 104 [a][2] exclude all refined petroleum products, fuels, crude oils or any fraction thereof [10].)

3.0 Investigative Efforts

3.1 Previous Sampling

3.1.1 Mole Pier Site

Sampling has been conducted at the NAVSTA site by the IT Corporation, as part of a SI report dated February 1992. Eighteen borings were completed at the Mole Pier site: fifteen soil borings to a total depth of 15 feet bgs and three monitoring wells. Monitoring wells were completed to total depths of between 20 and 28 feet bgs. A total of 41 soil samples were collected at depths of 5, 10, and 15 feet bgs, including four field duplicates. Samples were analyzed for total petroleum hydrocarbons (TPH), volatile organics (VOAs), semivolatile organics (BNAs), pesticides and PCBs, and California Title 26 metals. Five soil samples were submitted for dioxin and dibenzofuran analysis. All analyses were conducted according to EPA methodologies; fifteen percent of all analytical data generated during the 1992 SI was validated according to U.S. EPA Laboratory Data Validation Functional Guidelines.

Prior investigations had identified heavy metals and TPH in on-site soils, and trace heavy metals and VOAs in the groundwater (1,4,5). The 1992 SI included sampling to further determine the nature and extent of contamination at this site (1). Soil samples were collected at depths of 5, 10, and 15 feet bgs; locations are shown in Figure 3. Organic contaminants are summarized in Table 3.1-1 (1).

Table 3.1-1
Soil Contamination: Organic Contaminants (µg/Kg)
NAVSTA San Diego 1992, Mole Pier Site

Contaminant	Maximum Concentration	Depth (bgs)	Background Concentration	Benchmark (µg/Kg)
1,1,1-Trichloroethane	8	BH05 10 Feet	ND	5.2×10^7 (R)
2-Butanone	400	MW10 15 Feet	ND	--
2-Methylnaphthalene	67,000	MW10 15 Feet	ND	--
Acetone	1,200	BH12 5 Feet	ND	5.8×10^7 (R)
Anthracene	2,400	BH04 5 Feet	ND	1.7×10^8 (R)
Benzo(a)anthracene	5,600	BH04 5 Feet	ND	--
Benzo(a) pyrene	3,100	BH04 5 Feet	ND	80 (R)
Benzo(b)-fluoranthene	3,100	BH04 5 Feet	ND	--
Benzo(g,h,i)-perylene	1,500	BH04 5 Feet	ND	--
Bis(2-ethylhexyl)-phthalate	750	MW10 5 Feet	ND	--

Table 3.1-1 cont.

Contaminant	Maximum Contamination	Depth (bgs)	Background Concentration	Benchmark (µg/Kg)
Chrysene	5,600	BH04 5 Feet	ND	--
Ethyl Benzene	710	MW10 15 Feet	ND	5.8×10^7 (R)
Fluoranthene	15,000	BH04 5 Feet	ND	--
Fluorene	7,400	MW10 15 Feet	ND	2.3×10^7 (R)
Indeno(1,2,3,c,d)-pyrene	1,300	BH04 5 Feet	ND	--
Methylene Chloride	32	BH11 5 Feet	ND	7.8×10^4 (C)
Naphthalene	25,000	MW10 15 Feet	ND	2.3×10^7 (R)
PCB-1260	560	BH15 5 Feet	ND	76 (R)
Phenanthrene	13,000	BH04 5 Feet	ND	--
Phenol	180	BH08 15 Feet	ND	3.5×10^8 (C)
Pyrene	11,000	BH04 5 Feet	ND	1.7×10^7 (R)
Toluene	4,400	BH02 15 Feet	ND	1.2×10^8 (R)
Xylenes (Total)	970	BH04 10 Feet	ND	1.2×10^9 (R)
OCDD	10.4	BH04 10 Feet	ND	--
HpCDD	3.4	BH04 10 Feet	ND	3.9 (C)
HxCDD	0.81	BH04 10 Feet	ND	0.094 (C)
PeCDD	0.11	BH04 10 Feet	ND	7.8×10^{-3} (C)

Benchmarks:

R = Reference Dose Screening Concentration
 C = Cancer Risk Screening Concentration
 -- = Not Established

OCDD = Octachlorodibenzodioxin
 HpCDD = Heptachlorodibenzodioxin
 HxCDD = Hexachlorodibenzodioxin
 PeCDD = Pentachlorodibenzodioxin

The subsurface soil contamination at the Mole Pier site consists primarily of polynuclear aromatics (naphthalene, anthracene, chrysene, fluorene, pyrene, etc.) associated with the burning of waste oils and organic material. This contamination is entirely consistent with the history of the site, which was known to be used for disposal of waste by open pit burning (see Section 2.3.1). This contamination is concentrated mainly in the southern part of the site in the vicinity of MW10 and BH04 (see Figure 3). Similarly, dioxin concentrations were also detected at a maximum in this location. Dioxins are associated with the combustion of oil and chlorinated solvent waste (1).

Acetone was the most common volatile contaminant found on site, with a maximum concentration of 1,200 µg/Kg at BH12. Acetone was not, however, detected at either BH04 or the MW10 soil sample (1).

Table 3.1-2
Soil Contamination: Inorganic Contaminants (mg/Kg)
NAVSTA San Diego 1992, Mole Pier Site

Contaminant	Maximum Concentration	Depth (bgs)	Background	Benchmark (mg/Kg)
Antimony	15.3	BH04 10 Feet	7.9	230 (R)
Arsenic	5.8	MW10 5 Feet	3.5	0.33 (C)
Barium	178	BH12 5 Feet	103	41,000 (R)
Beryllium	4.2	BH05 5 Feet	0.98	0.14 (C)
Chromium	54.7	MW10 5 Feet	19.1	2,900 (R)
Cobalt	16.8	BH05 5 Feet	9.0	--
Copper	2,440	BH02 15 Feet	51	--
Lead	462	BH02 15 Feet	97.3	--
Mercury	4.5	MW10 5 Feet	0.21	170 (R)
Molybdenum	1.9	MW11 15 Feet	ND	--
Nickel	20.6	BH02 15 Feet	6.6	12,000 (R)
Selenium	0.3	MW10 5 Feet	ND	2,900 (R)
Silver	1.5	MW11 15 Feet	ND	2,900 (R)
Vanadium	95.5	BH05 5 Feet	53	4,100 (R)
Zinc	936	BH02 15 Feet	ND	170,000 (R)

Benchmarks: R = Reference Dose Screening Concentration, C = Cancer Risk Screening Concentration,
-- = Not Established

Of the metals listed in Table 3.1-2, the following nine are present at above three times the background concentration, substantiating observed soil contamination:

Beryllium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, and Zinc.

Groundwater Investigation

Eight groundwater wells were sampled (MW02, MW03, MW04, MW05, MW09, MW10, MW11, and MW12). These wells are typically completed to depths ranging from 20 - 30 feet bgs. MW12 was the background well, southeast of the center of the Mole Pier site, as shown in Figure 3. Nine water samples were collected, including one duplicate. These samples were analyzed for TPH, volatile organic compounds (VOCs), BNAs, pesticides and PCBs, and California Title 26 metals.

The primary organic contaminants detected were motor oil and diesel. The maximum concentrations were found at MW05 (motor oil at 2,080 micrograms per liter [µg/L] and diesel at 410 µg/L. Benzoic acid and phenol detections were "J" qualified, since at 1 µg/L they were below method reporting limits. Toxaphene, PCB 1254, and PCB 1260 were all reported at 1 µg/L. The PCBs were in MW10, and the toxaphene was in MW11. Soil samples were collected during the installation of the wells. None of the primary soil contaminants located in this area of the site was located in the groundwater (1).

Table 3.1-3
Groundwater Contamination: Inorganic (µg/L)
NAVSTA San Diego 1992, Mole Pier Site

Contaminant	Maximum Concentration	Well	Background	Benchmark (µg/L)
Antimony	61	MW05	ND	14 (R)
Arsenic	5.7	MW10	3.8	0.02 (C)
Barium	109	MW02	26.7	2,500 (R)
Cadmium	11.1	MW04	ND	18 (R)
Molybdenum	44.9	MW02	18.4	--
Silver	9.1	MW02	7.6	180 (R)
Thallium	1.3	MW03	6.8	2 (M)
Vanadium	56	MW05	14.5	250 (R)
Zinc	38.1	MW04	215	11,000 (R)

Benchmarks:

R = Reference Dose Screening Concentration
C = Cancer Risk Screening Concentration
M = Maximum Contaminant Level
-- = Not Established

None of the metal contaminants detected in subsurface soils at concentrations greater than three times the background concentration was detected at elevated levels in groundwater. Thus, the leaching of metals to groundwater appears minimal at this site (1).

3.1.2 Salvage Yard

Soil and groundwater samples were collected during the Verification Step Investigation conducted by IT Corporation in 1988. During the Verification Step field investigation, 19 soil borings were installed to depths between 11 and 26 feet bgs. Forty-five samples were collected and analyzed for lead, silver, mercury, VOCs, and pesticides and PCBs. Twenty-two soil samples were analyzed for semivolatile organic compounds and 14 for TPH. Five of these borings were converted to monitoring wells. Five water samples were collected (3).

Five additional groundwater samples were collected from existing monitoring wells during the 1992 SI. No additional soil samples were collected. Acetone was detected in most of the subsurface soil samples collected; the maximum concentration was 2.4 mg/Kg at a depth of 9.8 feet bgs (BH-13). TPH contamination was detected across the site; the maximum concentrations were 750 mg/Kg at B016 (4 feet) and 170 mg/Kg at B005 (2.5 feet). The principal contaminants are summarized in Table 3.1-4 (1,3).

Maximum levels of organic and inorganic contaminants are concentrated at B010, at 3.5 feet. Background contaminant levels are not well documented in the Verification Step Investigation Report. Thus, the significance of the low level organic contamination is not apparent. Lead is the highest level contaminant present at this site, at levels far exceeding reported background concentrations for the other NAVSTA San Diego sites. However, the lead concentration had fallen to 10 ppm at a depth of 10 feet bgs in boring B010, indicating that the potential for groundwater migration is low. With the exception of acetone, all other B010 contaminants were below method reporting limits (MRLs) at a depth of 10 feet bgs, indicating that groundwater migration of the soil contamination is unlikely. (Groundwater level is approximately 10 feet bgs.) In addition, mercury, which was a contaminant of concern based on historical disposal of thermometers and compasses at this site, was also not detected at a depth of 10 feet bgs in borehole B010 (1,3).

Sediment samples were collected during the Verification Step Investigation from Paleta Creek and also from an unnamed dry stream bed adjacent to the site (see Figure 4 and Table 3.1-5). Since Paleta Creek is tidal in this area, upgradient and downgradient have little meaning. However, the Verification Step Investigation Report states that SS01, SS02, and SS03 are designated background samples, while SS04 and SS05 represent "downgradient" sediments in Paleta Creek (3).

Table 3.1-4
Soil Contaminants
NAVSTA San Diego 1988 Salvage Yard Site

Contaminant	Highest Concentration, Location, and Depth (bgs) (ppm)	Benchmark (mg/Kg)
Lead	5,480 B010; 3.5 Feet	1,000 (TTLC)
Mercury	0.92 B010; 3.5 Feet	0.170 (R)
Silver	12 B010; 3.5 Feet	2.9 (R)
Methylene Chloride	0.067 B011; 2.5 Feet	78 (C)
Carbon Disulfide	0.110 B011; 2.5 Feet	5.8×10^4 (R)
Acetone	2.4 B013; 9.8 Feet	5.8×10^4 (R)
Methyl Ethyl Ketone	0.050 B001; 8.5 Feet	--
Tetrachloroethene (PCE)	0.25 B010; 3.5 Feet	11 (C)
Chlorobenzene	0.007 B010; 3.5 Feet	12,000 (R)
1,2-Dichlorobenzene	6.7 B010; 3.5 Feet	52,000 (R)
1,4-Dichlorobenzene	6.8 B010; 3.5 Feet	24 (C)
4-Methylnaphthalene	8.3 B010; 3.5 Feet	--
2-Methylphenol	24 B010; 3.5 Feet	--
PCB: Aroclor 1254	18 B010; 3.5 Feet	0.076 (C)

Benchmarks:

R = Reference Dose Screening Concentration

C = Cancer Risk Screening Concentration

TTLC = CA Title 26 Total Threshold Limit Concentration

-- = Not Established

Table 3.1-5
Sediment Samples at the Salvage Site: NAVSTA San Diego (mg/Kg) 1988

Contaminant	Background	"Downstream"	Benchmark
Lead	99	115	None
Mercury	0.609	0.195	None
Methylene Chloride	0.53	ND	None
Carbon Disulfide	0.014	ND	None
Acetone	0.53	2.8	None
Fluoranthrene	ND	0.440	None
Pyrene	ND	0.420	None
PCBs	ND	ND	None

Note: There are no benchmarks for sediment contaminants.
ND = Not Detected

Groundwater Investigation

All organic contaminants were below MRLs; lead was non-detect in all well samples. This indicates that soil contaminants are not leaching into the groundwater at this site. A total of five groundwater samples were collected and analyzed for the same suite of compounds as the soil samples (3).

Further groundwater sampling conducted during the 1992 SI detected traces of carbon disulfide (8 µg/Kg) and 1,1-dichloroethane (DCA) and 1,2-DCA (6 µg/Kg and 2 µg/Kg, respectively) in the groundwater. Background concentrations for these contaminants are not well established (1).

3.1.3 DPDO Yard

A total of 12 soil borings were installed to depths of between 10 and 25 feet bgs at this site. Four of these borings were converted to monitoring wells. A total of 36 soil samples and five groundwater samples were collected. Soil samples were analyzed for VOCs, BNAs, TPH, metals, and pesticides and PCBs. MW04 was selected as the background bore (1).

Subsurface soil at this site was found to be contaminated with PAHs, acetone, carbon disulfide, and heavy metals. Carbon disulfide was the only soil contaminant that was also identified in the groundwater; cadmium and TCE were identified in the groundwater but not in on-site soils, and are therefore not attributable to the site. The pesticide dibutyl chlorendate is referenced in the text as a groundwater contaminant, but analytical results are not given in the tables of results (Tables 3.4-10; 4.2-4, SI Report, 1992) (1).

Table 3.1-6
Principal Organic Contaminants, Soil (µg/Kg)
NAVSTA San Diego 1992, DPDO Site

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Benchmark
Carbon Disulfide	370 BH06; 15 Feet	5.8 x 10 ⁷ (R)
Acetone	39 BH01; 10 Feet	5.8 x 10 ⁷ (R)
Diethylphthalate	91,000 MW# Boring; 5 Feet	--
Bis (2-ethylhexyl)phthalate	2,600 Sediment, SS02	--
Pyrene	1,200 BH01; 5 Feet	1.7 x 10 ⁷ (R)
Benzo(a)Pyrene	740 BH01; 5 Feet	80 (R)
Benzo(b)Pyrene	680 BH01; 5 Feet	--

Benchmarks:

R = Reference Dose Screening Concentration

-- = Not Established

Background organic concentrations for soil contaminants were not clearly defined for this site (1).

Table 3.1-7
Principal Inorganic Contaminants, Soil (mg/Kg)
NAVSTA San Diego 1992, DPDO Site

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Background	Benchmark (mg/Kg)
Arsenic	16.6 MW3 Bore; 10 Feet	2.7	0.33 (C)
Chromium	51.7 BH01; 5 Feet	18.3	2,900 (R)
Copper	450 BH01; 5 Feet	26.5	--
Lead	3,280 BH01; 5 Feet	16.4	--
Mercury	0.78 MW3 Bore; 10 Feet	ND	170 (R)
Nickel	10.7 BH08; 10 Feet	4.2	12,000 (R)

Table 3.1-7 cont.

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Background	Benchmark (mg/Kg)
Vanadium	86.2 BH08; 10 Feet	51	4,100 (R)

Benchmarks:

R = Reference Dose Screening Concentration

C = Cancer Risk Screening Concentration

-- = Not Established

Polyaromatic hydrocarbons (PAHs) (80 - 1000 µg/Kg) and chlordane (170, 180 µg/Kg) were found in surface sediment samples collected from dry stream beds adjacent to the site. Lead, copper, chromium, nickel, and zinc were also found at concentrations exceeding background levels for these metals, although since background levels were referenced to a subsurface soil boring, it is difficult to interpret these results. However, no results are given for the sediment sample collected from Paleta Creek. In addition, it is not possible to define upgradient and downgradient for these ephemeral streams, or for Paleta Creek, due to their tidal nature (1).

Table 3.1-8
Groundwater Results (µg/L)
NAVSTA San Diego 1992, DPDO Site

Contaminant	Maximum Concentration	Background	Benchmark (µg/L)
Carbon Disulfide	5	Unknown	3,500 (R)
TCE	55*	Unknown	3.2 (C)
Dibutyl Chlorendate	Not Listed	Unknown	--
Cadmium	8.7*	Unknown	18 (R)
Molybdenum	60.6	60.6	--
Selenium	10	Unknown	180 (R)

Benchmarks:

R = Reference Dose Screening Concentration

C = Cancer Risk Screening Concentration

-- = Not Established

* Not detected in on-site soils

3.1.4 Sewer Plant Site

A total of eight soil borings were completed during the 1992 SI, three of which were converted into monitoring wells. A total of 30 soil samples were collected for analysis. Three groundwater samples were collected during the SI. These samples were analyzed for BNAs, metals, cyanide, pesticides and PCBs, TPH, and VOCs.

The primary soil contaminants detected at this site were PAHs and heavy metals; no petroleum hydrocarbons were detected (1,2).

Background concentrations are not well defined for the organic contaminants. With the exception of carbon disulfide, organic contaminant concentrations reduced to non-detect with depth (20 feet bgs) (1).

Organic and inorganic results are presented in Tables 3.1-9 and 3.1-10, respectively.

Table 3.1-9
Principal Organic Soil Contaminants (µg/Kg)
NAVSTA San Diego 1992, Sewer Plant Site

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Benchmark (µg/Kg)
Carbon Disulfide	31 BH01; 19 Feet	5.8 x 10 ⁷ (R)
Acetone	340 BH02; 5 Feet	5.8 x 10 ⁷ (R)
Bis(2-ethyl- hexyl)phthalate	16,000 BH01; 4 Feet	--
2-Methylnaphthalene	1,900 BH02; 10 Feet	--
4-Chloroaniline	2,600 BH02; 10 Feet	2.3 x 10 ⁶ (R)
Aroclor 1254	2,300 BH01; 4 Feet	76 (C)

Benchmarks:

R = Reference Dose Screening Concentration

C = Cancer Risk Screening Concentration

-- = Not Established

Table 3.1-10
Principal Inorganic Contaminants, Soil (µg/Kg)
NAVSTA San Diego 1992, Sewer Plant Site

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Background	Benchmark (µg/Kg)
Arsenic	4.8 MW01; 20 Feet	4.8	330 (C)
Cadmium	5 BH01; 4 Feet	ND	2.9 x 10 ⁵ (R)
Chromium	85.4 MW03; 10 Feet	18.7	2.9 x 10 ⁵ (R)
Copper	98.3 BH02; 15 Feet	2.1	--

Table 3.1-10 cont.

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Background	Benchmark ($\mu\text{g/Kg}$)
Lead	106 BH02; 5 Feet	ND	--
Mercury	1.8 BH04; 5 Feet	ND	1.7×10^5 (R)
Nickel	24.8 BH01; 4 Feet	9	1.2×10^7 (R)

Benchmarks:

R = Reference Dose Screening Concentration

C = Cancer Risk Screening Concentration

-- = Not Established

ND = Not Detected

Groundwater Investigation

The text of the 1992 SI states that dibutyl chlorendate was detected in all groundwater samples. However, the results tables do not list this contaminant (1).

Table 3.1-11
Principal Groundwater Contaminants ($\mu\text{g/L}$)
NAVSTA San Diego 1992, DPDO Site

Contaminant	Maximum Concentration	Background	Benchmark ($\mu\text{g/L}$)
1,1,1-TCA	3*	ND	200 (M)
Acetone	22	ND	3.5×10^3 (R)
Carbon Tetrachloride	9*	ND	0.27 (C)
Chromium	6	ND	180 (R)
Nickel	13.3	ND	700 (R)
Silver	8.3	3	180 (R)

Benchmarks:

R = Reference Dose Screening Concentration

C = Cancer Risk Screening Concentration

M = Maximum Contaminant Level

* Not detected in on-site soils

ND = Not Detected

3.1.5 Fire Fighting Training Facility (FFTF) Site

Five soil borings were completed to a depth of 15 feet bgs at this site. Two samples were collected from each boring, at depths of 5 feet bgs and 15 feet bgs, and analyzed for BNAs, metals, cyanide, PCBs, TPH, and VOCs. Boring B05 was selected as a background sample.

Soil sample results are presented in Table 3.1-12.

Groundwater Investigation

One groundwater sample was collected from each of the seven existing monitoring wells at this site; no new wells were installed. Each sample was analyzed for BNAs, metals, cyanide, pesticides and PCBs, TPH, and VOCs. One field duplicate was collected.

The primary contaminant in groundwater was diesel at 6,370 µg/L. 1,1-Dichloroethene was detected at 30 µg/L, 1,1-dichloroethane at 21 µg/L, and carbon disulfide at 3 µg/L. Background levels for these solvents are not defined; none of these contaminants was detected in on-site soils. Metals concentrations in the groundwater at this site were comparable to background levels (1).

The 1992 SI made no reference to the floating product (2.7 feet) observed in the shallow groundwater during the PA of 1989 at this site, nor to the 19,000 mg/Kg (1.9 percent) TPH in soil (2). The floating product is a matter of considerable concern and may pose the greatest threat to the San Diego Bay of any of the five sites investigated during the SI. There is no explanation in the SI text as to why floating product was not found, when prior investigations had determined it to be present. In addition, San Diego County Environmental Health Department received a report from NAVSTA San Diego of a petroleum product discharge to a storm drain at this site in 1994. The storm drain connects to the San Diego Bay. There is no estimate of the amount of petroleum discharged at this time (9).

The floating product issue is to be further investigated during the closure of this facility, which is scheduled for the near future (9,10).

Table 3.1-12
Principal Soil Contaminants
NAVSTA San Diego 1992, FFTF Site

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Background	Benchmark
Acetone	.073 mg/Kg BH02; 15 Feet	ND	5.8 x 10 ⁴ mg/Kg (R)
2-Methyl-naphthalene	1.8 mg/Kg BH02; 15 Feet	ND	--
Naphthalene	.550 mg/Kg BH02; 15 Feet	ND	2.3 x 10 ⁴ mg/Kg (R)
Arsenic	4.6 mg/Kg BH01; 8 Feet	2.0 mg/Kg	0.33 mg/Kg (C)
Chromium	15.7 mg/Kg BH04; 5 Feet	7.7 mg/Kg	2,900 mg/Kg (R)
Lead	13.3 mg/Kg BH01; 5 Feet	2.7 mg/Kg	--
Nickel	5.4 mg/Kg BH04; 5 Feet	ND	12,000 mg/Kg (R)

Table 3.1-12 cont.

Contaminant	Maximum Concentration, Location, and Depth (bgs)	Background	Benchmark
Vanadium	52.9 mg/Kg BH04; 5 Feet	23 mg/Kg	4,100 mg/Kg (R)

Benchmarks:

R = Reference Dose Screening Concentration

C = Cancer Risk Screening Concentration

-- = Not Established

ND = Not Detected

4.0 Hazard Ranking System Factors

The Hazard Ranking System (HRS) is a scoring system used to assess the relative threat associated with actual or potential releases of hazardous substances from sites. It is the principal mechanism EPA uses to place sites on the National Priorities List (NPL). URS has evaluated the following HRS factors relative to this site.

4.1 Sources of Contamination

Subsurface contamination at the potential sources of contamination is described in Section 3.0, Investigative Efforts, of this report. Sampling conducted during the SI and previous sampling events does not permit volume estimates of contaminated soil to be made. Wastes disposed of at these sites during their operation are summarized in Section 2.3, Operational History.

1. Mole Pier

This site occupies approximately 34 acres, 1,000 feet from the San Diego Bay, and is paved with the exception of the ball field (approximately 3 acres). Subsurface soil contamination at this site includes polynuclear aromatic hydrocarbons, copper, lead, nickel, and zinc. Table 2.3-1 summarizes the materials that were disposed of at this site (1).

2. Salvage Yard

This site occupies approximately 20 acres, 3,000 feet from the San Diego Bay, and is an asphalt-paved parking lot. Subsurface soil contaminants at this site include lead, acetone, methylene chloride, carbon disulfide, and polynuclear aromatic hydrocarbons (3).

3. DPDO Yard

This site occupies an area of approximately 11 acres, 3,500 feet from the San Diego Bay, and has been paved since 1955. Subsurface soil contaminants at this site include acetone, polynuclear aromatic hydrocarbons, lead, copper, and zinc (1). Table 2.3-2 summarizes the materials disposed of at this site.

4. Sewer Plant Site

This site occupies approximately 12 acres, 2,000 feet from the San Diego Bay, and is graded but not paved. Subsurface soil contamination at this site includes polynuclear aromatic hydrocarbons, dibutyl phthalate, chromium, copper, and lead (1,2).

5. FFTA Site

This site occupies approximately 7 acres, 2,000 feet from the San Diego Bay, and is asphalt-paved. Subsurface soil contamination consists of polynuclear aromatic hydrocarbons, chromium, lead, copper, and arsenic (1,2).

4.2 Groundwater Pathway

4.2.1 Hydrogeologic Setting

The western portion of the base is built on permeable artificial fill, consisting of sandy clay and gravel (1,2,3,4,5). Groundwater underlying the NAVSTA San Diego base is at a depth of approximately 10 feet bgs, and is not considered potable due to salt water intrusion. Most of the groundwater discharges into Paleta Creek and into San Diego Bay. There are five hydrogeologically identifiable zones within the upper 100 feet of soil at the NAVSTA site. These are summarized as follows (1,2,3,4,5):

1. **Recent Fill:** Found at 1 - 10 feet bgs, this material consists of silty fine sand and clay.
2. **Hydraulically Placed/Dredged Fill:** The IAS indicates that hydraulic fill has been used at this site since 1920, to create land from parts of the bay and mud flats. This material is silty sand with clay balls and shell fragments, and is found at the surface and underlying the recent fill (5).
3. **Bay Deposits:** Silty sand with thin clay lenses. Located under the hydraulic fill; approximately 10 feet thick.
4. **Quaternary Terrace:** Brownish silty sand to olive gray clayey sand; 4 - 50 feet thick.
5. **Bay Point Formation:** Silty to clean sands with some silt. Extends below the maximum depth of previous investigations (101 feet).

The net annual precipitation is 0.67 inches (16).

Table 4.2-1
Groundwater Flow Information:
NAVSTA San Diego 1988, 1992

Site	Groundwater Flow Rate (feet/year)	Flow Direction & Depth	Hydraulic Conductivity	Tidal Influence?
Mole Pier	10.1	Toward Bay 10-11 feet	3.4×10^{-3} ft/min	0.1 - 1 foot
Salvage Yard	2.9	Toward Bay 8-9 feet	4.88×10^{-3} ft/min	yes
DPDO Yard	10	Toward Bay 7-11 feet	$0.55 - 5.5 \times 10^{-3}$ ft/min	yes
Sewer Plant	1.1	Reverses with Tide 14-17 feet	$0.95 - 1.6 \times 10^{-3}$ ft/min	yes
FFTA	3.2	Toward Bay 8-9 feet	$0.63 - 3.2 \times 10^{-3}$ ft/min	yes

4.2.2 Groundwater Targets

San Diego derives all of its drinking water from surface sources: 93 percent is imported, and 7 percent comes from a local reservoir. The city of San Diego has a standby well in El Cajon, about 15 miles from the site, which supplies approximately 0.01 percent of the water usage, when activated. This well is screened at approximately 900 feet bgs (15). National City, Chula Vista, and Bonita derive drinking water from the Sweetwater Authority, which uses primarily surface water (93 - 96 percent). Groundwater accounts for 4 - 7 percent (approximately 1 million gallons per day), from one well in National City, approximately 2 miles east of the site, screened at approximately 900 feet bgs (6).

There is no evidence for the hydraulic continuity of the shallow aquifer underlying the NAVSTA site with the drinking water aquifer. The groundwater quality of the shallow aquifer is poor due to salt water intrusion (1,2). The drinking water aquifer is believed to extend from between 200 feet to 1,500 feet bgs. These wells are screened at approximately 900 feet bgs, and are not hydraulically connected to the groundwater underlying the NAVSTA site at a depth of 10 feet bgs (3,6,15).

Groundwater discharges primarily into San Diego Bay and Paleta Creek. Therefore, groundwater targets are addressed in the surface water section of this report. There are no beneficial uses of groundwater underlying the site (1,2,3,4).

4.2.3 Groundwater Pathway Conclusion

Groundwater provides a pathway for contaminants to reach San Diego Bay and Paleta Creek. There are no drinking water targets for groundwater contaminants on-site. On-site groundwater, located in the fill material, is not hydraulically connected to the drinking water aquifer, which is in the San Diego formation, at 900 feet bgs (1,6,15).

4.3 Surface Water Pathway

4.3.1 Hydrologic Setting

Four intermittent streams drain watersheds that are tributary to the Bay in the immediate eastern and upland areas near the NAVSTA site. These creeks are Lower Chollas, Lower South Chollas, Paleta, and Paradise. All receive runoff collected by drainage along Harbor Boulevard, and all are tidal in their lower reaches. The upper reaches are intermittent streams, flowing only during wet periods. Surface drainage from the Mole Pier, Salvage Yard, DPDO Yard, and Fire Fighter Training Facility sites can reach Paleta Creek. However, these sites are all mainly paved, so that the potential for contaminant migration via this route is low. The streams have no existing or potential beneficial use (1,2,3,4).

The sampling conducted thus far does not substantiate an observed release to these surface waterways. (An observed release is when the chemical analysis of an environmental sample from a site is found to be three or more times above the background concentration, and some portion of the release is attributable to the site.) Sediment samples prove difficult to interpret because the tidal nature of the creeks makes it impossible to define upstream and downstream sample locations. Sediment contamination has been detected at two of the sites (Salvage Yard; DPDO Site), but attribution is not possible. The maximum 2-year, 24-hour precipitation at the site is 1.8 inches (11).

Shallow on-site groundwater discharges to Paleta Creek and San Diego Bay (1,2,3,4,5).

4.3.2 Surface Water Targets

Recreational use of the Bay in the immediate vicinity of the NAVSTA site is restricted, due to military security. Commercial and private fishing are restricted in the shipyard area, due to generally poor quality of the water. The surface water targets are the following federal or state endangered species (1,2,13):

- Light footed clapper rail (*Rallus longirostris levipes*); Federal Endangered
- Beldings savannah sparrow (*Passerculus sandwichensis beldingi*); CA Endangered
- California black rail (*Laterallus jamaicensis coturniculus*); CA Threatened
- California least tern (*Sterna antillarum browni*); Federal Endangered
- Least bells vireo (*Vireo bellii pusillus*); Federal Endangered
- Salt water harvest mouse (*Reithrodontomys rautentriss*); Federal Endangered

There are California least tern's protected nesting habitats 2 miles to the southwest of NAVSTA, at the Naval Amphibious Base, Coronado. The Paradise Creek/Sweetwater River Complex, a salt water marsh habitat, is located 1.5 miles to the south (5). California Department of Fish and Game catch block records indicate that approximately 274,000 pounds of fish was caught within the San Diego Bay and the Pacific Ocean within 15 miles of the site during 1987 (14).

4.3.3 Surface Water Pathway Conclusion

Groundwater is tidally influenced at the site, clearly indicating that it represents a pathway to San Diego Bay (1). However, there is no analytical data to support contaminant release to either Paleta Creek or the Bay via this mechanism. San Diego County Environmental Health Department expressed concern that the floating product layer (JP-4, JP-5, diesel) previously identified at the FFTA site in the PA of 1989 could impact the Bay, and that there may be observed releases of this petroleum product to the Bay (2,9,10). The Navy has not yet determined whether this material is subject to the CERCLA exclusion, although URS believes that this is the case (10). Potential targets for contaminants migrating via groundwater to the San Diego Bay are identified in Section 4.3.2.

4.4 Soil Exposure and Air Pathways

The sites under review are all primarily paved. There is no known surficial soil contamination in the small unpaved areas (e.g., Mole Pier playing Fields); therefore, the soil exposure and air pathways were not evaluated (1,2,3,4,5).

5.0 Emergency Response Considerations

The National Contingency Plan (NCP) [40 CFR 300.415 (b) (2)] authorizes the Environmental Protection Agency to consider emergency response actions at those sites which pose an imminent threat to human health or the environment. For the following reasons a referral to EPA Region IX's Emergency Response Section does not appear to be necessary:

-
- There is no threat to the drinking water supply.
 - There are no tanks, drums, or other containers of hazardous materials presenting an imminent fire and explosion hazard to nearby residents.

6.0 Current Condition of the Site

Further investigations are currently in progress at the site. These include:

Solid Waste Assessment Test (SWAT) investigation of the Golf Course Landfill: This landfill contains only organic debris (no municipal or hazardous waste), and was not investigated in the SI of 1992, since it was slated for no further action following the IAS of 1986 (1,5,7,10).

SWAT investigation/SI of the Ship Repair Basins: This site was not selected for a SI following the IAS and PA. Further investigation of this site is under way. Historical data indicate that CERCLA waste quantities disposed of at this site are small compared to the other five sites that are the subject of this report (5,7,10).

7.0 Summary

The Naval Station San Diego is located approximately 3 miles southeast of the center of San Diego, 10 miles north of the Mexican Border. The site occupies approximately 1,127 acres. Of the U.S. Navy Installation Restoration Program (IRP) sites identified at facility, five were selected for further study, and a Site Inspection was conducted by the Navy's contractor, IT Corporation, in 1992. The following five sites were investigated:

Mole Pier: Created in 1942 with hydraulic fill material, this site was used for open pit burning of hazardous waste and demolition debris. Solvents and petroleum products were disposed of at this site. Subsurface soils are contaminated with organic and inorganic contaminants.

Salvage Yard: The salvage yard was previously the site of two incinerators. Various solvents, paints, and transformers were disposed of at this site. There is organic and inorganic contamination of subsurface soils.

Defense Property Disposal Office (DPDO) Site: Petroleum wastes were applied to the site for dust control from 1943 - 1975. Primary soil contaminants are polynuclear aromatic hydrocarbons.

Sewer Plant Site: This is the site of a former sewer plant, which was decommissioned in 1963. There is phthalate and low level volatile organic contamination of subsurface soils.

Fire Fighter Training Facility (FFTF): There is polynuclear aromatic hydrocarbon contamination of subsurface surface soils. Facility is still in operation.

Since groundwater at this site is shallow (10 feet below ground surface) there is potential for contaminants to leach from soil to groundwater. Groundwater contamination is primarily confined to metals, although low levels of volatile organic contaminants are also noted. Since the sites are all mainly paved, surface water runoff, direct contact, and air exposure are not considered important exposure pathways.

The following are Hazard Ranking System factors associated with the site:

- Floating petroleum product exists on the shallow groundwater at the FFTF site. This poses a threat to the marine life of the Bay but is excluded from consideration by the petroleum exclusion provision of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).
- There may be ongoing discharges of petroleum products (JP-4, JP-5) via the storm drains at the FFTF site.
- There is an observed release of heavy metals to groundwater. However, there are no targets. (An observed release is when the chemical analysis of an environmental sample from a site is found to be three or more times above the background concentration, and some portion of the release is attributable to the site.)
- There are sensitive environments (Least tern protected nesting habitats, salt water marshes) within 2 miles of the site.
- The sites are mainly paved, so that the potential for direct contact or airborne exposure is minimal.
- It is difficult to document an observed release to the waters of the San Diego Bay from contaminated on-site groundwater due to the great dilution factor when groundwater interacts with the Bay waters.

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION IX

Site Name: San Diego Naval Station

EPA ID #: CA4170090233

Alias Site Names:

City: San Diego

County or Parish: San Diego County

State: CA

Refer to Report Dated: May 27, 1994

Report Type: Federal Facility SI Review

Report developed by: URS Consultants, Inc.

DECISION:

☒ 1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:

☒ 1a. Site does not qualify for further remedial site assessment under CERCLA (Site Evaluation Accomplished - SEA)

☐ 1b. Site may qualify for further action, but is deferred to: ☐ RCRA ☐ NRC

☐ 2. Further Assessment Needed Under CERCLA

2a. (optional) Priority: ☐ Higher ☐ Lower

2b. Activity ☐ PA ☐ ESI
Type ☐ SI ☐ HRS evaluation

☐ Other _____

DISCUSSION/RATIONALE:

The site does not appear eligible for the NPL at this time.

Report Reviewed
and Approved by: _____

Signature: *Carolyn J. Douglas*

Date: *6/7/94*

Site Decision
Made by: _____

Signature: *Carolyn J. Douglas*

Date: *6/7/94*

References

1. IT Corporation, *Preliminary Draft Site Inspection Report, San Diego Naval Station*, February, 1992
2. Martin Marietta Energy Systems, Inc., *Final Preliminary Assessment Letter Report, San Diego Naval Station*, September, 1989.
3. IT Corporation, *Verification Step Report, Naval Station Salvage Yard*, February 1988.
4. Ecology and Environment, Inc., *Federal Facility Preliminary Assessment Review*, August, 1989.
5. SCS Engineers, Inc., *Initial Assessment Study, Naval Station San Diego*, May 1986.
6. Smyth, J., Sweetwater Authority, and Des Garner, URS Consultants, Inc., telephone conversation, April 21, 1994.
7. Humphries, M., RWQCB, and Des Garner, URS Consultants, Inc., telephone conversation, April 21, 1994.
8. Zarnoch, J., Cal EPA, and Des Garner, URS Consultants, Inc., telephone conversation, April 27, 1994.
9. Church, V., San Diego County Environmental Health Department, and Des Garner, URS Consultants, Inc., telephone conversation, May 9, 1994.
10. Basinet, Rick, Naval Facilities Engineering Command, and Des Garner, URS Consultants, Inc., telephone conversation, April 27, 1994.
11. U.S. Department of Commerce, National Oceanic & Atmospheric Administration (NOAA), National Weather Service, *NOAA Atlas II, Precipitation Frequency Atlas of the Western United States*, Volume XI, California, Silver Springs, Maryland, 1973.
12. U.S. Geological Survey, 7.5-minute topographic map, National City and Point Loma quadrangles, California, 1967, photorevised 1975.
13. U.S. Environmental Protection Agency, Geographic Information Systems Laboratory, printout for the San Diego Naval Station site, April 1993.
14. California Department of Fish and Game, Marine Resource Division, *Catch Block Data*, August 1988.
15. Chapin, D., City of San Diego, Water Utilities Department, and Des Garner, URS Consultants, Inc., telephone conversation, April 27, 1994.
16. U.S. Department of Commerce, National Oceanic & Atmospheric Administration, National Environmental Satellite Data & Information Service, National Climatic Data Center, *Comparative Climatic Data for the United States through 1985*, Nashville, TN.

Appendix A
Contact Log and Reports

Contact Log

Facility Name: San Diego Naval Station
Facility ID#: CA4170090233

Contact	Affiliation	Phone #	Date	Information
Marisela Humphries	Regional Water Quality Control Board (RWQCB)	(619) 467-2968	4/21/94	See Contact Report.
John Zarnoch	California Environmental Protection Agency Department of Toxic Substances Control	(310) 590-4878	4/27/94	See Contact Report.
Dana Chapin	City of San Diego, Water Utilities Department	(619) 668-3234	4/27/94	See Contact Report.
Jim Smyth	Sweetwater Authority	(619) 420-1413	4/27/94	See Contact Report.
Richard Basinet	Naval Facilities Engineering Command	(619) 532-1636	5/4/94, 5/9/94	See Contact Report.
Vickie Church	San Diego County Environmental Health Department	(619) 338-2222	5/9/94	See Contact Report.



Contact Report

Contact Made Concerning: CA4170090233
San Diego Naval Station
San Diego, CA 92136-5000

Agency or Affiliation Contact: Regional Water Quality Control Board (RWQCB)
Department:
Address: 9771 Claremont Mesa
City, State, Zipcode: San Diego, CA 92124-1331
County: San Diego

Representative Contact:
Name: 1. M. Humphries 2. 3.
Title: Project Mgr.
Contact Phone Number: (619) 467-2968
Contact Date: 4/21/94
Contact Facsimile Number:

Contacted by URS Representative: Des Garner

Discussion:

RWQCB is currently the lead agency at the San Diego Naval Station. However, this role will be assumed by Cal EPA on July 1, 1994. At this time Cal EPA will become the lead agency for all military facilities in California. Current activities ongoing at the facility include the following:

A Site Inspection (SI) of the Ship Repair Basin. This site was recommended for no further action after the Initial Assessment Study (IAS) of 1986. It was therefore not included in the SI of 1992. However, RWQCB and Cal EPA subsequently determined that further investigative work was warranted at this site, so that a SI was undertaken in 1993. URS was advised to contact the Naval Facilities Engineering Command to procure a copy of the 1993 report. Further work is ongoing at this site. URS requested a copy of this report.

A Solid Waste Assessment Test investigation is in progress at the Golf Course Landfill. The landfill is reported to contain primarily organic waste and is not within the scope of the URS investigation.

There is an ongoing investigation of underground storage tanks located on the facility.

End Contact Report

This contact report was sent for confirmation by: ☐ Letter ☐ Phone ☐ Fax ☐ Other _____

This contact report was reviewed by:
(Signature and Date) _____



Contact Report

Contact Made Concerning: CA4170090233
San Diego Naval Station
San Diego, CA 92136-5000

Agency or Affiliation Contact: California Environmental Protection Agency (EPA)
Department: Toxic Substances Control (DTSC)
Address: 245 West Boulevard, Suite 425
City, State, Zipcode: Long Beach, CA 90802
County: Los Angeles

Representative Contact:

Name:	1. J. Zarnoch	2.	3.
Title:	Project Mgr.		
Contact Phone Number:	(310) 590-4878		
Contact Date:	4/27/94		
Contact Facsimile Number:			

Contacted by URS Representative: Des Garner

Discussion:

DTSC and the Regional Water Quality Control Board (RWQCB) are involved in the regulatory oversight of the San Diego Naval Station. DTSC is currently reviewing work plan reports for the facility, and has reviewed both draft and final Site Inspection (SI) reports for the Ship Repair Basin Site.

After July 1, 1994, DTSC will be the lead state agency for this facility; however, RWQCB will still be closely involved in all document review and decision-making.

End Contact Report

This contact report was sent for confirmation by: ☐ Letter ☐ Phone ☐ Fax ☐ Other _____

This contact report was reviewed by:
(Signature and Date) _____



Contact Report

Contact Made Concerning: CA4170090233
San Diego Naval Station
San Diego, CA 92136-5000

Agency or Affiliation Contact: City of San Diego
Department: Water Utilities Department
Address: 5530 Kiowa Drive
City, State, Zipcode: La Mesa, CA 91942
County: San Diego

Representative Contact:

Name:	1. Dana Chapin	2.	3.
Title:	Engineer		
Contact Phone Number:	(619) 668-3234		
Contact Date:	4/27/94		
Contact Facsimile Number:			

Contacted by URS Representative: Des Garner

Discussion:

San Diego obtains 93 percent of its water from imported surface water and 7 percent from local reservoirs. One groundwater well, Fletcher Well, is used on a standby basis. This well is located approximately 15 miles from the site and supplies less than 0.01 percent of the total water when in use. It is screened at approximately 900 feet below ground surface.

End Contact Report

This contact report was sent for confirmation by: ☐ Letter ☐ Phone ☐ Fax ☐ Other _____

This contact report was reviewed by:
(Signature and Date) _____



URS Consultants
Environmental Protection Agency
Site Assessment Program

Contact Report

Contact Made Concerning: CA4170090233
San Diego Naval Station
San Diego, CA 92136-5000

Agency or Affiliation Contact: Sweetwater Authority
Department: Engineering
Address: PO Box 2328
City, State, Zipcode: Chula Vista, CA 91912-2328
County: San Diego

Representative Contact:

Name:	1. Jim Smyth	2.	3.
Title:	Chief Eng.		
Contact Phone Number:	(619) 420 1413		
Contact Date:	4/27/94		
Contact Facsimile Number:			

Contacted by URS Representative: Des Garner

Discussion:

The Sweetwater Authority supplies drinking water to National City, Chula Vista, and Bonita. Water is primarily surface water (California Aqueduct, Sweetwater Reservoir) at between 15 and 25 million gallons per day depending on the season. Approximately 1 million gallons per day (4-7 percent of the total) is obtained from a well in National City, which is screened at approximately 900 feet below ground surface. Mr. Smyth stated that the groundwater aquifer in this area extends from about 200 feet to 1,500 feet below ground surface.

End Contact Report

This contact report was sent for confirmation by: ☐ Letter ☐ Phone ☐ Fax ☐ Other _____

This contact report was reviewed by:
(Signature and Date) _____



Contact Report

Contact Made Concerning: CA4170090233
San Diego Naval Station
San Diego, CA 92136-5000

Agency or Affiliation Contact: Naval Facilities Engineering Command
Department: Southwest Division
Address: 1220 Pacific Highway
City, State, Zipcode: San Diego, CA 92132
County: San Diego

Representative Contact:

	1.	Rick Basinet	2.	Rick Basinet	3.
Name:		Commanding Ofcr.		Commanding Ofcr.	
Title:					
Contact Phone Number:		(619) 532-1636		(619) 532-1636	
Contact Date:		5/4/94		5/9/94	
Contact Facsimile Number:					

Contacted by URS Representative: Des Garner

Discussion:

Mr. Basinet confirmed that there was a 1993 Site Inspection (SI) report detailing further investigation of the Ship Repair Basin. He also confirmed that a Solid Waste Assessment Test investigation had been conducted at the Golf Course Landfill. A SI is in progress regarding further work at the Ship Repair Basin.

The Golf Course Landfill received only organic debris from grounds keeping operations and does not impact URS' assessment of this site.

Mr. Basinet stated that approximately 2 feet of free product had previously been identified at the Fire Fighting Training Facility (FFTF) site. However, this floating product was not evident when the groundwater was sampled during the SI of 1992. The floating product is believed to consist of JP-4, JP-5, and diesel, and as such would be subject to the Comprehensive Environmental Response, Compensation, and Liability Act exclusion. However, the Navy has not yet determined that this is the case, since there is some concern that other contaminants may be present. The facility is scheduled for closure in the near future, at which time further sampling will be conducted to characterize the nature of the groundwater contamination at the site. The closure will involve demolishing existing structures at the site and will thus permit further sampling at these areas to delineate potential sources of the contamination.

End Contact Report

This contact report was sent for confirmation by: ☐ Letter ☐ Phone ☐ Fax ☐ Other _____

This contact report was reviewed by:
(Signature and Date) _____



Contact Report

Contact Made Concerning: CA4170090233
San Diego Naval Station
San Diego, CA 92136-5000

Agency or Affiliation Contact: San Diego Health Department
Department: County Environmental Health
Address: PO Box 85261
City, State, Zipcode: San Diego, CA 92186-5261
County: San Diego

Representative Contact:

Name:	1. Vickie Church	2.	3.
Title:	Project Mgr.		
Contact Phone Number:	(619) 338-2222		
Contact Date:	5/9/94		
Contact Facsimile Number:			

Contacted by URS Representative: Des Garner

Discussion:

San Diego County Environmental Health Department (SDCEH) does not have jurisdiction for the Installation Restoration Program sites at the San Diego Naval Station. SDCEH is involved with issuing well and boring permits, and removing/remediating above ground storage tanks (ASTs) and underground storage tanks (USTs) (Chapter 6.5, 6.7 CA Health & Safety Code). SDCEH may be involved at the Fire Fighter Training Facility (FFTF) site, which has both ASTs and USTs. This is not clear at this time, since the Navy has not determined whether the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) petroleum exclusion provisions apply to this site.

Ms. Church expressed concern that the floating product (2.7 feet) previously identified at the FFTF site posed a substantial threat to the San Diego Bay. She also mentioned that she believed that there had been recent releases of petroleum product to the Bay from this site. URS stated that this was a significant issue, but that it would probably not impact the Hazard Ranking System assessment of the site, since this petroleum product would be subject to the CERCLA exclusion. Ms. Church stated that the Navy had not yet determined whether this material was subject to the CERCLA exclusion provisions (see Contact Report: Rick Basinet).

Ms. Church stated that SDCEH had received a report from the Naval Station in the spring of 1994. The report stated that petroleum products had been found in a storm drain at the FFTF. The storm drain connects to the Bay. No information is currently available regarding the quantity of the release.

SDCEH continues to play an active role in site management, cooperating with the Regional Water Quality Control Board and the Dept. of Toxic Substances Control in reviewing documents.

End Contact Report

This contact report was sent for confirmation by: ☐ Letter ☐ Phone ☐ Fax ☐ Other _____

This contact report was reviewed by:
(Signature and Date)

Appendix B
Latitude/Longitude Worksheet

**LATITUDE AND LONGITUDE CALCULATION WORKSHEET #1
WHEN USING CUSTOM RULER OR COORDINATOR (TM)**

SITE: San Diego Naval Station NUMBER: CA4170090233
AKA: _____ SSID: _____
ADDRESS: San Diego
CITY: San Diego STATE: CA ZIP CODE: 92136-5000
SITE REFERENCE POINT: 8th Street and Harbor Drive
TOPO MAP National City TOWNSHIP: 17 South RANGE: 2 West
SCALE: 1:24,000 MAP DATE: 1967 SECTION: 1/4 1/4 1/4 1/4
MAP DATUM: ☒ 1927 ☐ 1983 MERIDIAN: San Bernardino

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP:

LONGITUDE: 117° 00' 00" LATITUDE: 32° 37' 30"

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5 SUB-MAP:

LONGITUDE: 117° 00' 00" LATITUDE: 32° 42' 30"

CALCULATIONS: LATITUDE (7.5 MINUTE QUADRANGLE MAP)

A) ALIGN THE BOTTOM OF THE SCALE WITH BOTTOM OF GRID. ALIGN THE TOP OF THE SCALE WITH THE TOP OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.

B) READ TICS ON RULER AT 1OR 0.5 SECOND INTERVALS. (INTERPOLATE IF POSSIBLE)

2' 39"

C) RECORD LATITUDE: 32° 40' 09" N

CALCULATIONS: LONGITUDE (7.5 MINUTE QUADRANGLE MAP)

A) ALIGN THE BOTTOM OF THE SCALE WITH THE RIGHT SIDE OF GRID. ALIGN THE TOP OF THE SCALE WITH THE LEFT SIDE OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.

B) READ TICS ON RULER AT 1 SECOND INTERVALS. (INTERPOLATE IF POSSIBLE)

6' 30"

C) RECORD LONGITUDE: 117° 06' 30" W

INVESTIGATOR: Des Garner

DATE: 04/29/94